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Test and Evaluation

TEST AND EVALUATION PROCESS

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OPR: HQ USAF/TEP
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1. The Air Force needs to ensure the weapons systems it uses, and the systems that support them, meet or exceed operational requirements in terms of effectiveness and suitability and are ready for fielding. To do so, the Air Force conducts realistic, cost-effective, and credible test and evaluation (T&E) programs through all phases of the acquisition and fielding process. This directive establishes policies for the T&E process and infrastructure.

2. The Air Force (T&E) process will:

2.1. Through Developmental Test and Evaluation (DT&E), Qualification Test and Evaluation (QT&E), including Contractor Testing (CT), demonstrate systems feasibility, confirm engineering design and development are complete, minimize design risks, and ensure systems perform as required in their intended environments. DT&E and QT&E results support weapon system life cycle decisions and certification of the system as ready for dedicated Air Force Initial Operational Test and Evaluation (IOT&E).

2.2. Through IOT&E, Qualification Operational Test and Evaluation (QOT&E), or Follow-on Test and Evaluation (FOT&E), demonstrate, under as operationally realistic conditions as possible and practical, that systems are operationally effective, suitable, and capable of meeting the user's requirements. IOT&E and QOT&E results support the decision to proceed beyond low-rate initial production or to field the system. FOT&E, including Weapon System Evaluation Programs (WSEP), supports decisions relative to the service life of the system.

2.3. The Air Force T&E process will not develop operational requirements, but will ensure user-provided requirements can be evaluated. Emphasis should be placed on key parameters and threshold values found in the Operational Requirements Document to ensure these requirements can be measured and rated (AFPD 10-6, *Mission Needs and Operational Requirements*).

3. The Air Force will operate, maintain, and improve T&E facilities, including Major Range and Test Facility Bases (MRTFB) and the US Air Force Test Pilot School, to support US Air Force, Department of Defense, and other valid user requirements. In addition, the Air Force will continually evaluate test infra-

structure requirements and capabilities to ensure essential Air Force needs are met, and to avoid unnecessary duplication and expense of excess test resources.

4. The Air Force will conduct WSEP to provide ongoing, realistic, rigorous T&E of complex weapon systems. WSEP ensures proper weapon system performance in combat and supports US Air Force decision-makers regarding operational capabilities, force structure, required modifications, and requirements.

5. This directive establishes the following responsibilities and authorities:

5.1. HQ USAF/TE is responsible for policy, advocacy of test resources, and oversight of the entire T&E process throughout the Air Force.

5.2. Major command (MAJCOM), field operating agency (FOA), Air Reserve components (ARC), direct reporting units (DRU), and other center commanders ensure T&E programs are executed in compliance with this policy. Commanders are responsible for maintaining test infrastructure to support the Air Force test process, including both DT&E and OT&E.

6. This policy applies to all MAJCOMs, FOAs, DRUs, and Air Force activities, including ARC .

7. See **Attachment 1** for measures of compliance.

8. See **Attachment 2** for related abbreviations, acronyms, and terms.

9. See **Attachment 3** for related publications.

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Director of Test and Evaluation

Attachment 1

MEASURING AND DISPLAYING COMPLIANCE WITH POLICY

A1.1. Compliance with T&E policy will be assessed quarterly by taking measurements related to two major areas:

1. Developmental Test and Evaluation (DT&E), including Contractor Testing (CT).
2. Operational Test and Evaluation (OT&E).

Measurement charts will display trends toward improving the quality, effectiveness, and efficiency of both the DT&E and OT&E programs.

A1.1.1. The policy on conducting DT&E or QT&E will be assessed by measuring the percentage of certified programs failing OT&E **Figure A1.1**. Measurements will be taken by HQ AFMC/DO and reported to HQ USAF/TE no later than 10 days following the end of the quarter. HQ USAF/TE will send compiled results to the Chief of Staff via RCS:HAF-TEP(Q) 9331, *Management Information System--Test and Evaluation Brief*. The report is designated emergency status Code D; discontinue during emergency conditions.

A1.1.2. The policy on conducting IOT&E and QOT&E will be assessed by measuring the percentage of final OT&E test reports rejected by the appropriate Designated Acquisition Authority. A final report will be judged deficient if either additional operational testing is required as a result of inadequate testing, or the results of the operational test are challenged because of questionable test techniques **Figure A1.2**. Measurements will be taken by HQ Air Force Operational Test Evaluation Center and reported to HQ USAF/TE no later than 10 days following the end of the quarter. HQ USAF/TE will send compiled results to the Chief of Staff via RCS:HAF-TEP(Q) 9332, *Management Information System--Test and Evaluation Brief*. This report is designated emergency status Code D; discontinue during emergency conditions.

Figure A1.1. Sample Metric of Certified Programs Failing OT&E.

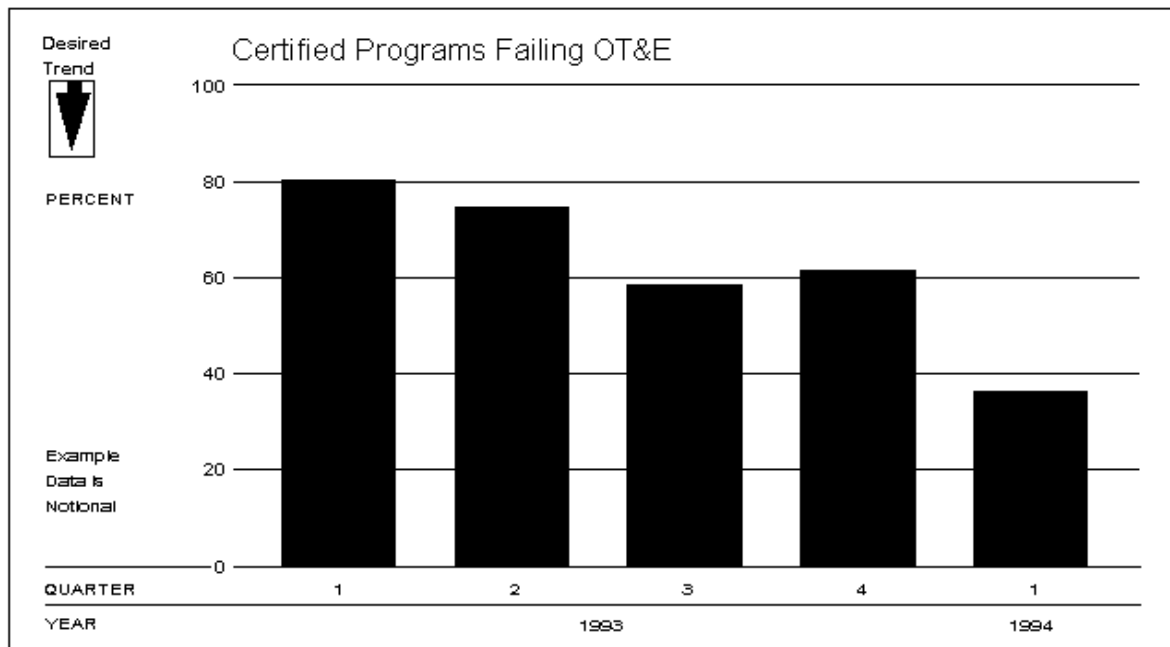
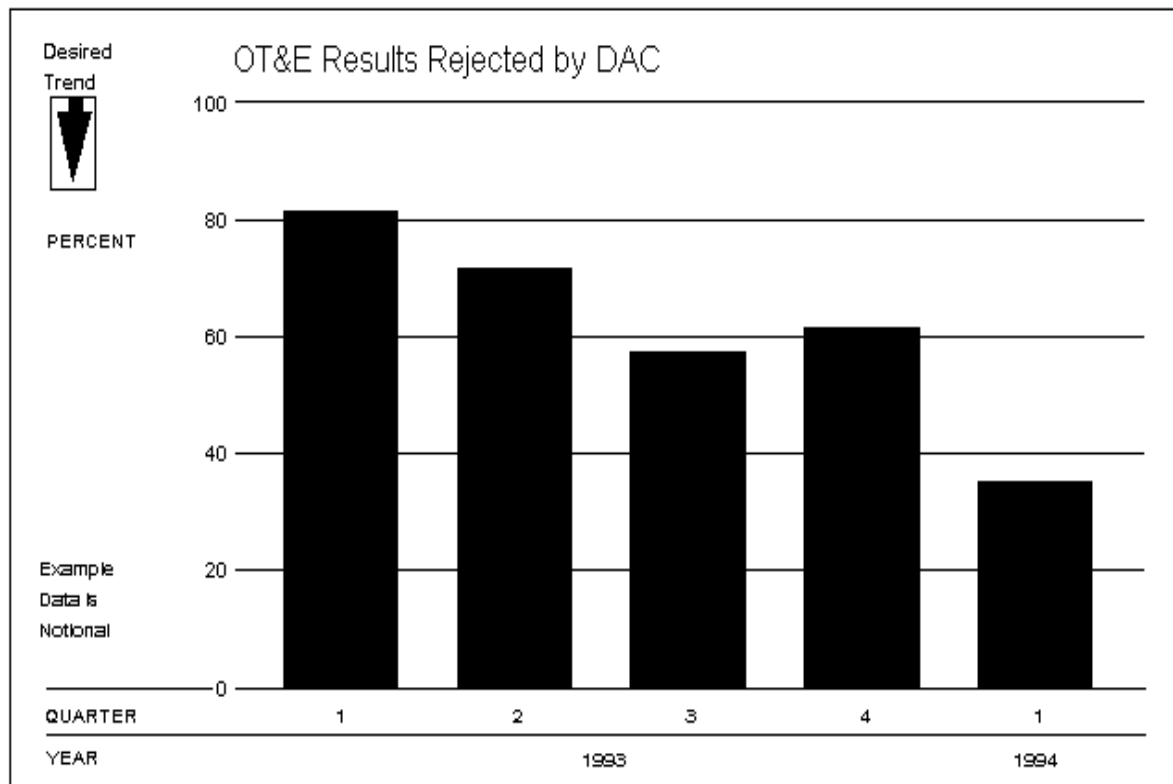


Figure A1.2. Sample Metric of OT&E Results Rejected by DAC.



Attachment 2

ABBREVIATIONS, ACRONYMS, AND TERMS

A2.1. Developmental Test and Evaluation (DT&E), including contractor testing, is conducted to evaluate design approaches, validate analytical models, quantify contract technical performance and manufacturing quality, measure progress in system engineering design and development, minimize design risks, and predict integrated system operational performance (effectiveness and suitability) in the intended environment and identify system problems (or deficiencies) to allow for early and timely resolution or correction.

A2.2. Follow-on Operational Test and Evaluation (FOT&E) is used to refine the estimates made during initial operational test and evaluation or qualification operational test and evaluation, evaluate changes and verify correction of deficiencies, assist in tactics development, and to reevaluate the system to ensure that it continues to meet operational needs and retains its effectiveness and suitability in a new environment or against a new threat. FOT&E is normally conducted by the using command unless higher headquarters directs otherwise.

A2.3. Initial Operational Test and Evaluation (IOT&E) is conducted under conditions that are operationally realistic as possible and practical, using production or production representative test articles to determine if the system, as developed, will meet the user's defined operational requirements. IOT&E can also be used to assist the using command in tactics development.

A2.4. Major Range and Test Facility Bases (MRTFB) are those specified test activities defined in Department of Defense (DoD) Directive 3200.11 as "national assets." The DoD MRTFB is maintained primarily to support the test and evaluation process (developmental test and operational test) of US military systems. In addition, many of the MRTFB test resources (sites and testing assets referred to as MRTFB activities) provide a training capability.

A2.5. Qualification Operational Test and Evaluation (QOT&E) is conducted in lieu of initial operational test and evaluation on programs for which there has been no research and development effort, and on certain modifications to existing systems.

A2.6. Qualification Test and Evaluation (QT&E) is conducted in lieu of developmental test and evaluation, which may involve contractor and government testing, on programs where there has not been a preceding research and development effort and on certain modifications to existing systems.

A2.7. Test Resources encompass all resources needed to support the entire test and evaluation process, including but not limited to: contractor test facilities, test ranges, manpower, training, base operations support (BOS), flying time, support equipment, threat systems, models and simulations, instrumentation, communications, range equipment facilities, data protection and security systems, and munitions and targets.

Attachment 3

RELATED PUBLICATIONS AND INSTRUCTIONS

Implementing Publications

Title 10, U.S. Code, Section 2399, *Operational Test and Evaluation of Defense Acquisition Programs* 1986

DoD Directive 5000.1, *Defense Acquisition* February 23, 1991

DoD Instruction 5000.2, Part 7, with Change 1, *Defense Acquisition Management Policies and Procedures* February 23, 1991

DoD 5000.2-M, Part 7, with Change 1, *Defense Acquisition Management Documentation and Reports* February 1991

DoD Directive 3200.11, with Changes 1 through 3, *Major Range and Test Facility Base* September 29, 1980

Interfacing Publications

AFI 99-101, *Developmental Test and Evaluation* (formerly AFRs 80-14 and 80-19)

AFI 99-102, *Operational Test and Evaluation* (formerly AFRs 55-43 and 80-14)

AFI 99-103, *Electronic Combat (EC) Test Process*

AFI 99-104, *Software Test Process*

AFI 99-105, *Live Fire Test*

AFI 99-106, *Joint Test and Evaluation* (formerly AFR 80-20)

AFI 99-107, *US Air Force Test Pilot School* (formerly AFR 53-19)

AFI 99-108, *Programming and Reporting Missile and Target Expenditures in Test and Evaluation* (formerly AFR 55-11)

AFI 99-109, *Test Resource Planning* (formerly AFR 80-14)

AFI 99-111, *Test Infrastructure* (formerly AFR 80-28)

AFI 99-112, *System Deficiency Reporting*